

Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 7 -

January 16, 2004

REMARKS

This is in response to the Office Action dated August 21, 2003. Reconsideration is respectfully requested.

Request for Extension of Time

Applicant hereby requests that the period for reply be extended two months, from November 21, 2003 to January 21, 2004. A check in the amount of \$210 is enclosed to cover the two-month extension fee pursuant to 37 CFR 1.17(a)(2).

Interview Summary

Applicant thanks the Examiner for the interview granted his attorney on December 5, 2003. During the interview, amendments to Claims 1, 16, 30 and 31 were discussed in conjunction with arguments against the rejections as to form under 35 USC 112 and obviousness over U.S. Patent No. 4,287,245 to Kikuchi in view of UK Patent Application No. 2 296 749 to Villain cited by the Examiner. It was proposed by applicant's attorney that the Claims 1 and 16 be amended to overcome the rejections as to form by incorporating additional terms of degree as suggested by the Examiner. Furthermore, applicant's attorney described the unique features of the expansion/contraction joints recited in Claim 1, 30 and proposed new Claims 31 and 32. The Examiner suggested that a declaration under 37 CFR 1.132 might be useful in clarifying the non-obvious nature of the expansion/contraction joints recited in the amended claims. Such a declaration is being prepared and will be filed in a supplemental reply to the Action.

Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 8 -

January 16, 2004

Summary of Rejections

Claims 1-4, 14-17, 19, 20, 24-26 and 30 are pending and all are rejected, Claims 18, 21-23 and 27-29 having been canceled in a reply to a previous Action dated April 8, 2003.

Claims 1-4, 14-17, 19, 20, 24-26 and 30 are rejected as indefinite, the same claims being rejected as obvious over U.S. Patent No. 4,287,245 to Kikuchi in view of UK Patent Application No. 2 296 749 to Villain.

The Arguments

Applicant respectfully traverses the Examiner's rejections as to indefiniteness and obviousness and presents the following arguments against the rejections on a claim-by-claim basis.

Claims 16 and 24-26 (Indefiniteness)

Claim 16 and 24-26 are rejected as indefinite, the Examiner contending that the term "different" recited in these claims to describe the thermal shock characteristics of the inner and outer insulation layers in the invention is vague and indefinite. Applicant has amended these claims to recite "substantially different" in describing the thermal shock characteristics of the various insulation layers as suggested by the Examiner to overcome the perceived indefiniteness.

Support for the amendments may be found in the description on page 8, lines 13-33, and page 9, lines 1-5, which recite use of a flexible polyimide foam for the inner insulation layer and substantially different materials, namely, stiffer polymeric foams such as polyurethane or polyisocyanurate foam for the outer insulation layer. As further stated on page 3, lines 17-20, polymeric foam is preferred because it will remain flexible and not become embrittled at cryogenic temperatures for which the invention

Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 9 -

January 16, 2004

in intended. Also on page 3, it is stated, at lines 27-29, that polyurethane or polyisocyanurate foams, that may be harder than the polyimide foam, may be used for the outer layers of insulation.

Polyimide foams are preferred because they remain flexible at cryogenic temperatures and can better withstand the stresses induced by thermal shock, unlike polyurethane or polyisocyanurate foams, which are less flexible and not as well adapted to withstand the stresses of thermal shock.

Claims 1 and 30 (Indefiniteness)

Claims 1 and 30 are rejected as indefinite, the examiner stating that the term "contraction/expansion joint" appears vague and confusing. Applicant has amended these claims to recite that the contraction/expansion joint comprises radially extending gaps, thereby providing an unambiguous, definite structure to eliminate any confusion perceived by the Examiner.

Claims 1 and 30 (Obviousness)

Independent Claims 1 and 30 recite insulation modules having expansion and contraction joints comprising gaps extending radially outwardly from the surface of the component being insulated. Claim 1 further recites that the gap terminates in spaced relation to a cladding layer surrounding the insulation layers in which the gaps are formed. Claim 30 recites that the gaps are spaced apart longitudinally relative to gaps in a longitudinally adjoining module portion. Neither of these features is taught or suggested in the references cited by the Examiner, and neither feature is obvious in view of the references.

Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 10 -

January 16, 2004

The Examiner implicitly admits that neither Kikuchi nor Villain expressly teaches expansion/contraction joints in the form of gaps by his statement that "forming a gap intermittently along the length to accommodate spacers which responds to contraction/expansion due to temperature changes is old and well known". He does not cite either reference as directly teaching these concepts, but proposes to modify the references using knowledge that he considers is "old and well known". Even if such knowledge is old and well known, applicant's teachings that the gap need not extend completely through the insulation layer (recited in Claim 1) and that the gaps are advantageously spaced apart longitudinally are not at all well known or obvious.

Only the applicant recognized that "most contraction behavior is observed inwardly of about one third of the distance from the insulation module...surface to the component surface" (page 10, lines 11-15), thereby allowing the gap forming the contraction/expansion joint to terminate in spaced relation to the cladding layer and thereby ensure improved resistance to heat transfer as well as water vapor ingress. Only the applicant recognized the advantage to positioning the gaps forming the contraction/expansion joints on one module portion in spaced apart relation from the gaps on another module portion to which it is longitudinally adjacent (Claim 30), the advantage realized being "to allow secure jointing and minimum risk of water vapor ingress" (page 12, lines 31-32).

There is no teaching or suggestion of these features as recited in Claims 1 and 30 in the art cited by the Examiner, and furthermore, there is no motivation, either in the known prior art, or in knowledge generally available to one of ordinary skill in the art, to incorporate such features into

Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 11 -

January 16, 2004

the insulation modules disclosed in Kikuchi or Villain and obtain applicant's invention.

To establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference or references when combined, must teach or suggest all the claim limitations. (MPEP, Section 2143, Page 2100-122.)

Because the aforementioned elements recited in Claims 1 and 30 are neither taught nor suggested in any of the cited references, and because there is no motivation to modify the inventions disclosed in the cited references to include these elements, the references cannot properly support a rejection of amended Claims 1 and 30 on the basis of obviousness.

Claims 2-4, 14-17, 19, 20, 24-26 and 31 depend, either directly or indirectly, on Claim 1 and should be allowable for the same reasons that Claim 1 is allowable. Similarly, Claim 32 depends on Claim 30 and should be allowable for the same reasons that Claim 30 is allowable.

Summary

Applicant has shown that the pending claims, as amended, are allowable over the cited references and are not indefinite. Applicant contends, in view of the amendments and

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Reply to Office Action
Dated August 21, 2003

Appln. No. 09/830,398

- 12 -

January 16, 2004

arguments presented, that the application is in condition for allowance and, therefore, respectfully requests that it be passed to issue.

Respectfully submitted,

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Enclosures

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